

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application No.: 10/664,503
Filing Date: September 17, 2003
Appellant: Paul Taichiang Yu
Group Art Unit: 1795
Examiner: Imran Akram
Title: WGS REACTOR INCORPORATED WITH
CATALYZED HEAT EXCHANGER FOR WGS
REACTOR VOLUME REDUCTION
Attorney Docket: GP-302212

Mail Stop - Appeals
Commissioner for Patents
P.O. Box 1450
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APPELLANT'S REPLY BRIEF

This is Appellant's Reply Brief filed in response to the Examiner's Answer mailed July 6, 2009 to which a response is due by September 6, 2009. Please consider the comments below.

As discussed in Appellant's Brief, Appellant submits that Sheba does not make independent claims 1 and 20 obvious because Sheba does not teach a combination of a first water-gas shift reactor coupled to an inlet end of a heat exchanger by a connector and a second water-gas shift reactor coupled to an outlet end of the heat exchanger by a connector, and that providing such a combination is more than merely a design choice and provides significant advantages over fuel processing systems having individual elements.

The Examiner states on page 8 of the Examiner's Answer that it would be obvious to make the water-gas shift reactor 42, the heat exchanger 46 and the water-gas shift reactor 50 of Sheba integral because it would provide "better thermal efficiency." Appellant stated in the Brief that there is no teaching in Sheba of combining the water-gas shift reactor 42, the heat exchanger 46 and the water-gas shift reactor 50 as a single unit, or that it is even possible to combine these devices into a single unit.

Paragraph [0026] of Applicant's specification provides a non-limiting example of the WGS reactor assembly 48 that states that the reformat gas enters the heat exchanger 60 from the first stage water-gas shift reactor 52 at a temperature of 370°C and exits the heat exchanger 60 to be sent to the second stage water-gas shift reactor 68 at a temperature of 310°C. Appellant respectfully questions the Examiner's statement that making the Sheba elements integral provides better thermal efficiency. For the temperatures given above, if the first stage water-gas shift reactor 52 was not directly coupled to the heat exchanger 60, then the temperature of the reformat gas entering the heat exchanger 60 would be lower than 370°C because it would cool as traveled through the piping to the heat exchanger 60. Further, if the second stage water-gas shift reactor 68 was not directly coupled to the heat exchanger 60, then the temperature of the reformat gas exiting the heat exchanger 60 could be higher than 310°C because it would cool as travelled through the piping before it reached the second stage water-gas shift reactor 68. Thus, if the first state water-gas shift reactor 52, the heat exchange 60 and the second stage water-gas shift reactor 68 were not coupled together as a single unit, the heat exchanger 60 would have to reduce the temperature of the reformat gas less than the 60°C than it does when they are coupled together as a single unit. Thus, the thermal efficiency is reduced by coupling these

elements together. Therefore, Appellant respectfully submits that the Examiner's reasoning for motivation is flawed.

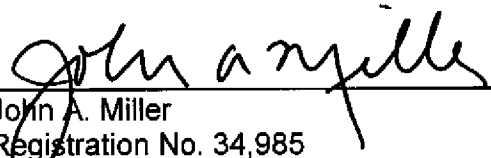
Further, it appears that based on the Examiner's arguments that it would be obvious to make any two components integral. Appellant respectfully submits that this is not the case, and is outside the scope of *prima facie* obviousness.

Respectfully submitted,

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Date: 8/26/09



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